REMARKS/ARGUMENTS

The objection to the drawings has been met by inserting references 14P and 14S in Figure 3 of the attached replacement sheet.

Claims 17 and 18 have been amended as set forth by the examiner to correct the informalities.

The amendment to page 1 of the description inserts the usual cross-reference to related applications from which priority was claimed.

In the Office Action, the examiner indicated that claims 6, 7, 13 and 14 were objected to as being dependent upon a rejected base claim but would be allowable if rewritten in independent form. These claims have been rewritten in independent form, including the limitations of original claims 1, 3, 8 and 10, respectively, and so are in allowable condition.

Claims 1 - 14 remain in this application. Claim 1 and corresponding method claim 8 were rejected under 35 U.S.C. 102(e) as anticipated by the disclosure of US patent number 5,832,032 (Overbury). Claims 1 and 8 have been amended to clarify that:

(i) the coupling means comprises a "circuit element having a capacitance equivalent to stray capacitance coupling between an input and an output, respectively, of the input means" and

(ii) the circuit further comprises "analog delay means for compensating for phase differences.."

Corresponding amendments have been made to method claim 8.

Claim 1 and 8 address the same problem as allowed claims 6, 7, 13 and 14, namely the coupling of high frequency noise signal across the stray capacitance of the input device. The solution is to extract the common mode noise signal, pass it through a circuit element having a capacitance that is equivalent to the stray capacitance of the input device, and subtract the resulting analog common mode estimate signal from the differential signal.

In allowed claims 6, 7, 13 and 14, the input device is a hybrid transformer and the circuit element having an equivalent capacitance is a similar hybrid transformer that is short-circuited. As mentioned in applicant's specification as originally filed (page 14, lines 1-10), however, the input means may not be a hybrid transformer. Nevertheless, the same principle can be applied, i.e., use a circuit element having the equivalent "stray" capacitance to derive from the extracted common mode signal an analog common mode estimate signal. As amended, claims 1 and 8 specify that the coupling device is such a circuit element and an analog delay element compensates for the phase shift introduced thereby. Such a simple, analog arrangement is neither

disclosed nor suggested by the Overbury reference, which uses a weighting device 90 controlled by a weight control signal 89 produced by three digital processors 84, 86, 88. As described at column 5, lines 34 to 44, the processors 84 and 86 process the differential mode and local field (CM) signals (previously converted to digital) to produce respective processed outputs 85 and 87. The third processor 88 compares characteristics of the processed outputs 85 and 87 to derive the weight control signal. Hence, the disclosure by Overbury, involving three digital signal processors, neither discloses nor suggests the simple analog circuit of claims 1 and 8, as amended. It is submitted, therefore, that claims 1 and 8 are patentable over Overbury. Claims 4, 5, 11 and 12, being dependent upon one or other of claims 1 and 8, are patentable for the same reasons.

The examiner rejected claims 2, 3, 9 and 10 under 35 U.S.C. 103(a) as unpatentable over Bingel *et al.* in view of Overbury. This rejection is respectfully traversed on the grounds that the examiner has erred in construing the claims and the references and so has not made a proper *prime facie* case of obviousness. Notwithstanding the traversal, for greater clarity, claims 2 and 9 have been amended and claims 3 and 10 been replaced by new claims 15 and 16.

Claims 2 and 9 have been amended to make it clear that the noise detector detects frequency bands in which the common mode signal exceeds predetermined levels and selects only those portions of the common mode signal to the adaptive filter. As a result of this arrangement, the noise cancellation circuit is capable of wideband operation. Neither Bingel *et al.* nor Overbury, whether taken individually or in combination, disclose or suggest such an arrangement. Overbury's system is narrowband (col. 6 lines 65-67) and does not select portions of the common mode signal based for adaptive filtering. As discussed above, Overbury uses two processors 84 and 86 to process the differential mode signal and common mode signal separately and then uses the third processor 88 to compare their characteristics, specifically by determining the ratio of the amplitudes of the signals at 105 and 108 (Figure 10), and their phase, and computing therefrom the complex weight.

Accordingly, claims 2 and 9 are patentable over the cited references.

New claim 15, corresponding to cancelled claim 3, covers a noise cancellation circuit which comprises the circuits of claims 1 and 2 combined and so can cancel noise coupled via the stray capacitance of the input means (e.g. hybrid transformer) and noise resulting from, for example, radio interference coupling into the transmission channel. Since it includes the subject matter of claims 1 and 2, claim 15 is patentable for the reasons advanced above in relation to those claims. Moreover, neither Bingel *et al.* not Overbury disclose or suggest using an analog cancellation circuit and a digital cancellation circuit in tandem. Accordingly, claim 15 is

patentable over the cited references.

Method claim 16 corresponds to claim 15 and so is patentable for the same reasons.

Claims 4, 5, 11 and 12, being dependent upon claims 1,15, 8 and 16, respectively, incorporate the features of those claims and so are patentable with them.

In view of the foregoing, it is submitted that all claims or record are patentable over the cited references and early and favourable reconsideration of the application is respectfully requested.

Respectfully submitted,

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Date

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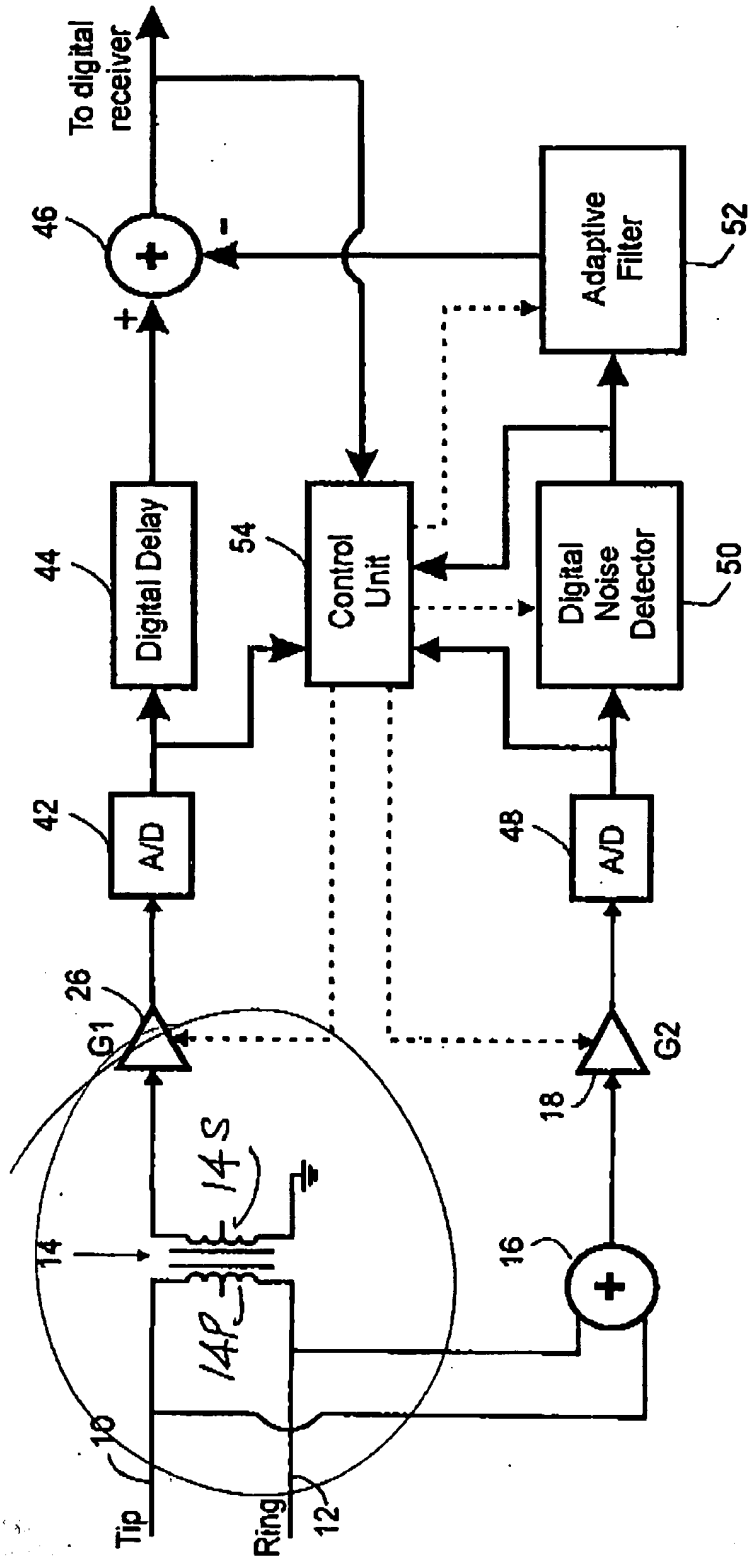
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Digital Delay
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Control Unit
Digital Noise Detector
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14S
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16
14P
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12

Fig. 3